

Table 1-1. Terminology for Various Data Units

Unit	Contents	Identification Number
Downlink Path	"Downlink Path" indicates a continuous mission data transfer in a single visible pass, excluding the first and the last PN code transmissions. Each channels, i.e., Qch, Ich, X1 and X3 have the same downlink path number. In general, one downlink path consists of more than one downlink segments.	downlink path number numbering rule <b>Pd<sup>ddd</sup>hn<sup>sss</sup>ssss</b> One number is assigned for a pass
Downlink Segment	"Downlink Segment" denotes a continuous true mission data range in one downlink path, excluding PN code transmissions between mission data transmissions. Each downlink segments accompanies PN code transmissions in front and behind them. One downlink segment yields the unit of level 0 data.	downlink segment number numbering rule <b>D<sup>xxxxdd</sup>ssss - ZZ</b> This number coincides with the operation segment number of corresponding DT-X/I/OGS-Ka.
Operation Segment	"Operation Segment" is a duration in which a sensor continues to operate in a given mode. When a sensor is driven longer than the orbital period in one mode, the operation segment is divided at appropriate boundaries in order to define its maximum length as an orbital period.	operation segment number numbering rule <b>N<sup>xxxxdd</sup>ssss</b>
Acquisition Segment	"Acquisition Segment" equals to an intersection of operation segment and downlink segment. One operation segment is generally divided into several acquisition segments. One downlink segment can also contain more than one acquisition segments.	acquisition segment number numbering rule <b>S<sup>xxxxdd</sup>ssss</b>

Notation: ddd  
 xxx  
 sss / sssss  
 nn  
 zz

days from the "origin" (TBD)  
 specifying mission instrument  
 sequential number in a day "ddd"  
 path number  
 supplemental number in an operation of "sss"

0001 to 9999  
 see the next page  
 001 (0001) to 999 (9999)  
 01 to 57  
 01 to 99

Table 1-2. Definition of Instrument Code "xxx"

	Original Name	xxx	Operation Seq.	Downlink Seq.	appeared in..	Acquisition Seq.
Sensor						
GLI	GLI 1km	GL1	Y	N	Y	Y
	GLI 250m	GL2	Y	N	Y	Y
AMSR	AMS	AMS	Y	N	Y	Y
SeaWinds	SEA	SEA	Y	N	Y	Y
POLDER	POL	POL	Y	N	Y	Y
ILAS-2	IL2	IL2	Y	N	Y	Y
DCS	DCS	DCS	Y	N	Y	Y
TEDA	TED	TED	Y	N	Y	Y
VMS	VMS	VMS	Y	N	Y	Y
DMS	DMS	DMS	Y	N	Y	Y
DMS-1	DM1	DM1	N	N	Y	Y
DMS-2	DM2	DM2	N	N	Y	Y
Channel						
X-1 channel	DT1	DT1	Y	Y	N	N
X-3 channel	DT3	DT3	Y	Y	N	N
IOCS	ICOS	ICOS	Y	Y	N	N
Recorder						
MDR-1	MD1	MD1	Y	N	N	N
MDR-2	MD2	MD2	Y	N	N	N
MDR-3	MD3	MD3	Y	N	N	N
ODR	ODR	ODR	Y	N	N	N

Y: used in the segment number

N: not used

Used in L0RL file

**Table 1-3. Characteristic Times Determined by MMO(1/2)**

Terms of Time	Description	Comments
X-band AOS	These indicate dates of AOS and LOS of ground stations for ADEOS-II, respectively.	MMO preserves each masking information and corresponding nominal RSP values.
X band LOS	AOS and LOS are determined for a virtual masking of EL = 0 deg or 5 deg.	Real timings of data transmission are calculated according to true masking of each ground stations.
Ka-band AOS	These indicate service time which is allocated to ADEOS-II. Every constraint is taken into account.	Reference of the date comes from NASA/TACC. The date is calculated on the basis of up-to-date predicted orbital data.
Ka-band LOS		
Date of Acquisition	Time to start or stop data transmission.	
Date of Downlink Path	The ground time is set.	
Date of Downlink Segment	Each downlink paths include both of true mission data and PN code intervals. This downlink path indicates a start and stop of mission data transmission excluding the first and the last PN code sets.	Interval between the begin and end dates of acquisition is shorter than that between AOS and LOS because of time necessary for establish data link.
Date of Operation Segment	The time corresponds to start and stop of an operation segment.	The start and the stop equal to a start of the first downlink segment and a stop of the last one, respectively.
Date of Acquisition Segment	The time corresponds to start and stop of an acquisition segment.	1 min. <= length of downlink segment <= 45 min.(TBD)
Lock-On/Off Date	The time corresponds to start and stop of an acquisition segment.	x min. <= length of operation segment <= 101 min. (TBD)
Date of Recording	This denotes time of RAW data recording, corresponding to the date of downlink path in the ground time.	Reference comes from the ground stations.

**Table 1-3. Characteristic Times Determined by MMO(2/2)**

Terms of Time	Description	Comments
Time of PN Code Transmission	This is a time for PN code duration occurring between true mission data transmissions, which is treated as a variable parameter by MMO.	tentatively defined as 30 sec.
MDR Start/Stop Margin	This indicates a time that is necessary for MDR to achieve steady motion after the start and before the stop of every operation mode, which is treated as a variable parameter by MMO.	
MDR Overlap Recording	When MDR is changed to another, there must be overlap of recording between two MDRs. It is defined by time, and its value is treated as a variable parameter by MMO.	
Overlap of Mission Data	Sensor mission data have overlapped portion resulting from MDR overlap recording, split reproduction and MRT/MDR overlap. User can read how long overlap occurs from the Operation Plan(OPLN) information.	x min. <= overlap time <= 5 min. (TBD)
Time from Ascending Node	Time from ascending node(A.N.) for several kinds of event information is added in the mission operation information files. The time always appears with RSP value.	Each overlap depends on a result of mission operation planning by MMO.
		OBC on ADEOS-II controls mission instruments with the interval of 1 sec from A.N.(0 at A.N.). The value exactly coincides with OBC timings.

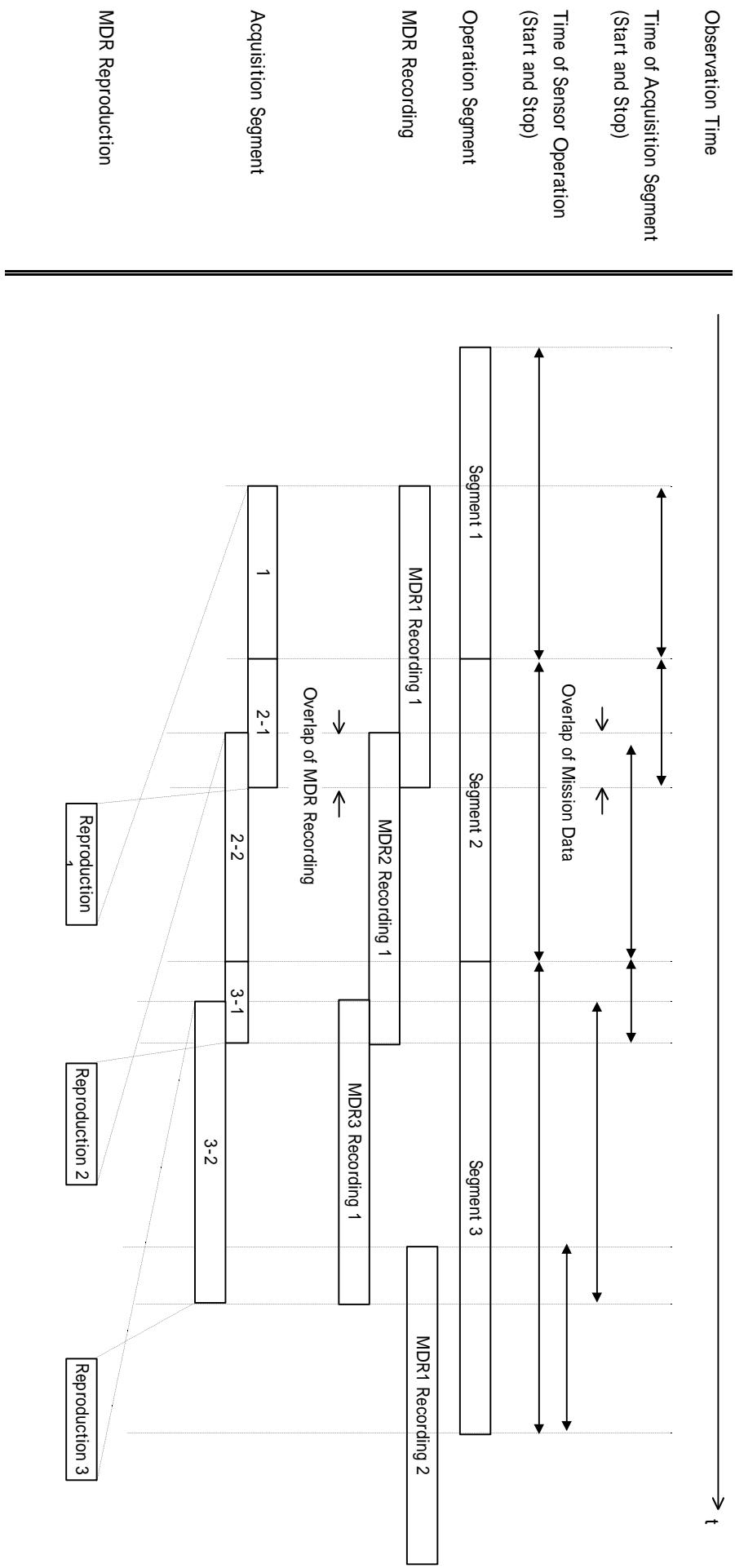


Figure 1-1: Inter-relations between Several Terminologies

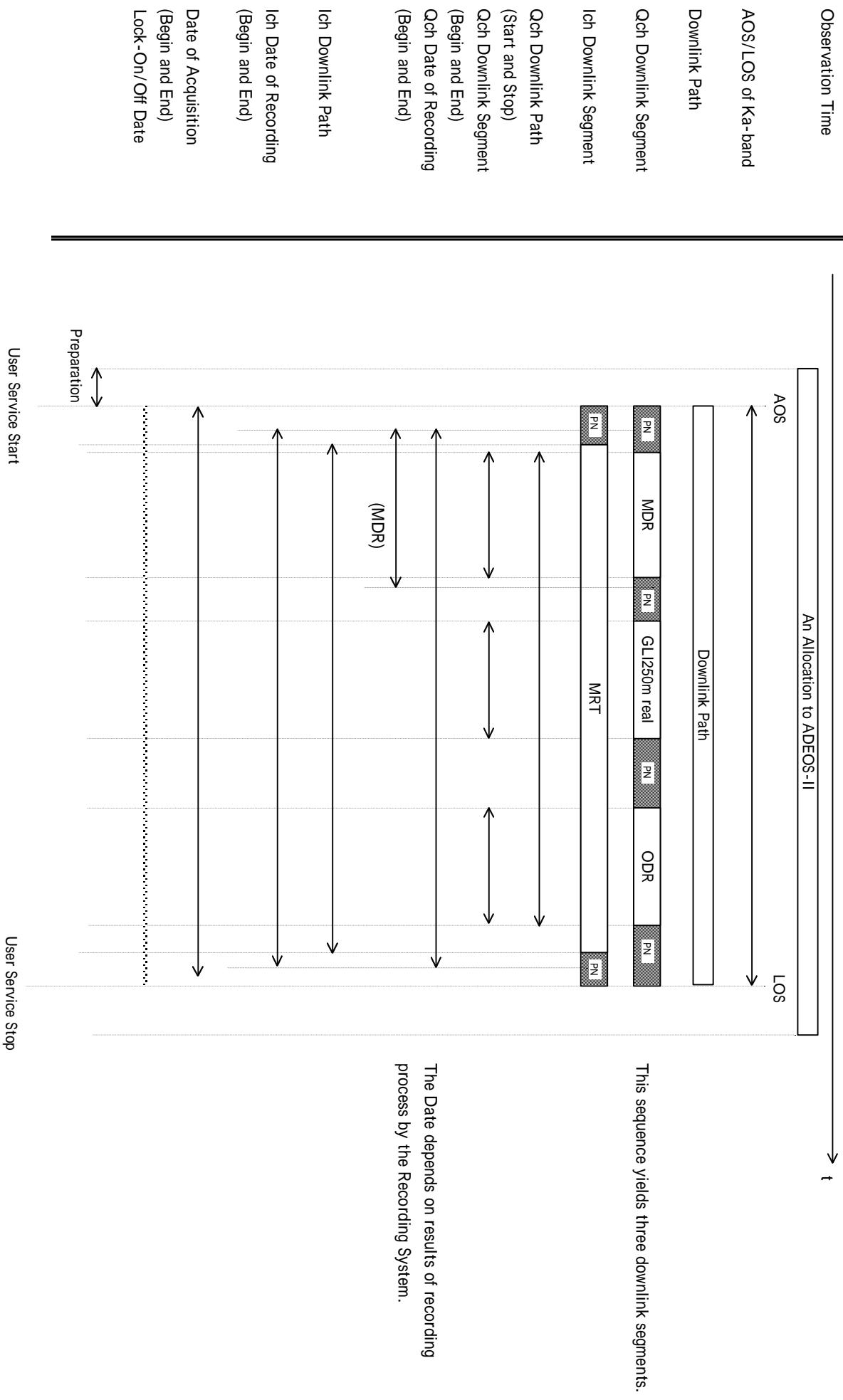


Figure 1-2: Terms Applied for Mode 1 Operation

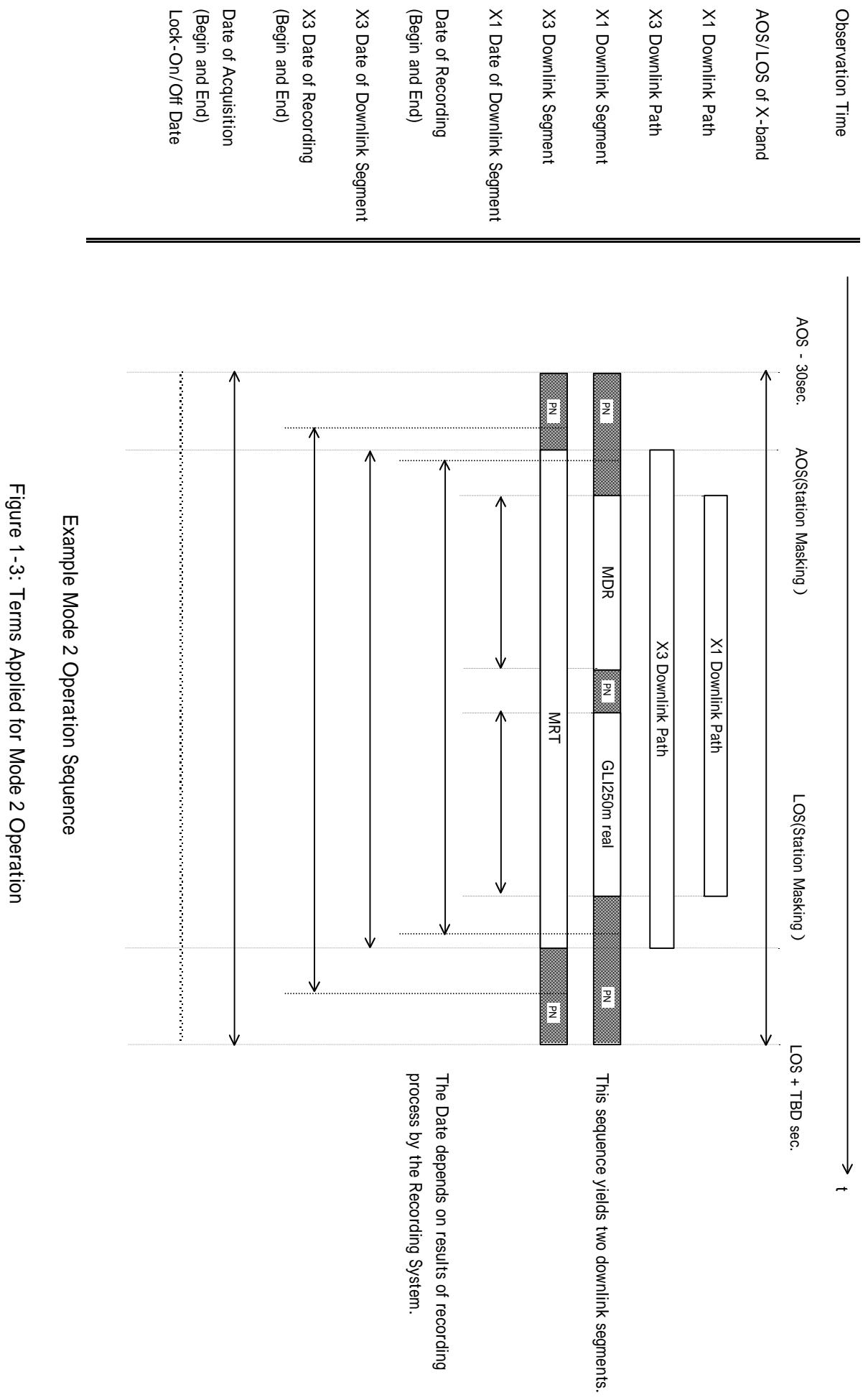


Figure 1-3: Terms Applied for Mode 2 Operation

Table 2.1 List of Common Interface Files

I/F DATA NAME	FROM	TO	FORM	File Name	Delivery Time	COMMENTS
Status Information (common information)	MMO	All	ASCII character set	STADnnnnn set	9:00 UTC	Delivery: Wednesday 1 day before scheduled maneuver Volume: one file for a scheduled maneuver
Predicted Orbital Data (common information)	MMO	All	ASCII character set	EPyyymdd set	8:00 UTC	Delivery: Case 1: delivered on Monday, Wednesday, Friday Case 2: delivered everyday Volume: same day and future 4 days 1 file = 1 day (UTC 0:00 - 23:59)
Definitive Orbital Data (common information)	MMO	All	ASCII character set	EDyyymdd set	8:00 UTC	Delivery: same as ELM/P Volume: previous 3 days 1 file = 1 day (UTC 0:00 - 23:59)
Time Difference Data (common information)	MMO	All	ASCII character set	TDyyymdd set	7:00 UTC	Delivery: every day Volume: daily report
Operation Results (common information)	MMO	All	ASCII character set	ORSTnnnn set	8:00 UTC	Delivery: every day Volume: daily results

Table 2.2 List of Interface Files with the Sensor Providers (specific data)

I/F DATA NAME	FROM	TO	FORM	File Name	Delivery Time	COMMENTS
Reply to Operation Request	MMO	Sensor Provider	ASCII character set	REQAnnnnn	any time	Delivery: after receipt of REQQ Volume: number of errors in REQQ
Operation Plan	MMO	Sensor Provider (Except POLDER)	ASCII character set	OPLNxnnnn	8:00 UTC	Delivery: Thursday 1 week before the target week Volume: operation plan for 1 week (Tue. to next Mon.)
Operation Plan (CNES/POLDER)	MMO	CNES	ASCII character set	OPL1nnnnn	8:00 UTC	Delivery: Thursday 1 week before the target week Volume: operation plan for 1 week (Tue. to next Tue.)
HK Telemetry	MMO	Sensor Provider (Except POLDER)	BINARY	HKSSPPYYMMDDmm	any time	
HK Data	MMO	CNES(POLDER)	BINARY	HKDTPOLDEnnnn	5:00 UTC	Delivery: every day
Level 0 Product Media Shipment Report	MMO	CNES(POLDER)	ASCII character set	SRZDnnnnnn	-	Delivery: once per week 1 File = 1 Tape
Operation Request	Sensor Provider	MMO	ASCII character set	REQQnnnnnn	7:00 UTC	Delivery: by Thursday 2 weeks before the target period Volume: requests for 1 week (Wed. to next Tue.)
Level 0 Product Readability (media) Report	CNES(POLDER)	MMO	ASCII character set	RDZDnnnnnn	-	Delivery: once per week 1 File = 1 Tape
SeaWinds Parameter	JPL(SeaWinds)	TACC	ASCII character set	SWPFnnnnnn	any time	Delivery: any time JPL needs (JPL / SeaWinds)

Table 2.3 List of Interface Files with the NASA Station (specific data)

I/F DATA NAME	FROM	TO	FORM	File Name	Delivery Time	COMMENTS
Station Operation Request	MMO	NASA Station	ASCII character set	REQRnnnn	8:00 UTC	Delivery: 1st: Thursday 3 weeks before the target period 2nd: Monday 2 weeks before the target period Volume: requests for 1 week (Wed. to next Tue.)
Operation Plan	MMO	NASA Station	ASCII character set	OPLNxnnnn	8:00 UTC	Delivery: Thursday 1 week before the target week Volume: operation plan for 1 week (Tue. to next Mon.)
Acquisition Plan	MMO	NASA Station	ASCII character set	SHAQnmmnn	8:00 UTC	Delivery: Thursday 1 week before the target week Volume: acquisition plan for 1 week (Wed. to Tue.)
Level 0 Processing Information	MMO	NASA Station	ASCII character set	LV0Pnmmnn	8:00 UTC	Delivery: 3 times per week (Mon, Wed, Fri) Volume: 1) Monday delivery 2) Wednesday delivery 3) Friday delivery 2 days; Wednesday and Thursday 3 days; Sunday, Monday and Tuesday
NRT Product Processing Information	MMO	NASA Station	ASCII character set	RTIGnmmnn	8:00 UTC	delivered in the same schedule with LV0P 1 file contains 1 operation segment
RAW Data Readability Report	MMO	NASA Station	ASCII character set	RDRMnmmnn	6:00 UTC	any time when RAW tape processing at EOC completed
Reply to Station Operation Request	NASA Station	MMO	ASCII character set	STGSnmmnn	1:00 UTC	Delivery: one day after receipt of REQR 1st: Friday 3 weeks before the target period 2nd: Tuesday 2 weeks before the target period Volume: reply for 1 week request
Recording Results	NASA Station	MMO	ASCII character set	RERChnnnn (RERBnmmnn)	after downlink	Delivery: every downlink 1 file for a downlink path
Level 0 Processing Results	NASA Station	MMO	ASCII character set	L0RLnmmnn	after L0 processing	any time when L0 processing at NASA completed 1 file for a downlink segment
RAW Data Shipment Report	NASA Station	MMO	ASCII character set	SRRMnmmnn	1:00 UTC	any time when RAW tape shipped from NASA Station

Table 2.4 List of Interface Files with Kiruna Station (specific data)

I/F DATA NAME	FROM	TO	FORM	File Name	Delivery Time	COMMENTS
Predicted Orbital Data including IERS data	MMO	Kiruna Station	ASCII character set	E\yyymmmdd	8:00 UTC	Delivery: Case 1: delivered on Monday, Wednesday, Friday Case 2: delivered everyday Volume: same day and future 4 days 1 file = 1 day (UTC 0:00 - 23:59)
Station Operation Request	MMO	Kiruna Station	ASCII character set	REQRnnnn	8:00 UTC	Delivery: 1st: Thursday 3 weeks before the target period 2nd: Monday 2 weeks before the target period Volume: requests for 1 week (Wed. to next Tue.)
Operation Plan	MMO	Kiruna Station	ASCII character set	OPLNxxxx	8:00 UTC	Delivery: Thursday 1 week before the target week Volume: operation plan for 1 week (Tue. to next Tue.)
Acquisition Plan	MMO	NASA Station	ASCII character set	SHAQnnnn	8:00 UTC	Delivery: Thursday 1 week before the target week Volume: acquisition plan for 1 week (Wed. to Tue.)
Level 0 Processing Information	MMO	NASA Station	ASCII character set	LVOPrnnnn	8:00 UTC	Delivery: 3 times per week (Mon, Wed, Fri) Volume: 1) Monday delivery 2) Wednesday and Thursday 2 days; Friday and Saturday 3) Friday delivery 3 days; Sunday, Monday and Tuesday
NRT Product Processing Information	MMO	NASA Station	ASCII character set	RTGnnnnn	8:00 UTC	delivered in the same schedule with LVOPr 1 file = 1 day
RAW Data Readability Report	MMO	Kiruna Station	ASCII character set	RDRMnnnn	6:00 UTC	any time when RAW tape processing at EOC completed
Reply to Station Operation Request	Kiruna Station	MMO	ASCII character set	STGSnnnn	1:00 UTC	Delivery: one day after receipt of REQR 1st: Friday 3 weeks before the target period 2nd: Tuesday 2 weeks before the target period Volume: reply for 1 week request
Recording Results	Kiruna Station	MMO	ASCII character set	RERCnnnn (RERBnnnn)	after downlink	Delivery: every day 1 file for a downlink path
Level 0 Processing Results	Kiruna Station	MMO	ASCII character set	L0RLnnnn	after L0 processing	any time when L0 processing at Kiruna completed 1 file for a downlink segment
RAW Data Shipment Report	Kiruna Station	MMO	ASCII character set	SRRMnnnn	1:00 UTC	any time when RAW tape shipped from Kiruna

Table 2.5 List of Interface Files with NOAA (specific data)

I/F DATA NAME	FROM	TO	FORM	File Name	Delivery Time	COMMENTS
Operation Plan	MMO	NOAA	ASCII character set	OPLNxnnnn	8:00 UTC	Delivery: Thursday 1 week before the target week Volume: operation plan for 1 week (Tue. to next Mon.) only for GLI information
NRT Product Processing Information	MMO	NOAA	ASCII character set	RTGnnnnn	8:00 UTC	Delivery: 3 times per week (Mon, Wed, Fri) Volume: 1) Monday delivery 2 days; Wednesday and Thursday 2) Wednesday delivery 2 days; Friday and Saturday 3) Friday delivery 3 days; Sunday, Monday and Tuesday 1 file contains 1 operation segment

**Table 2.6 List of Interface Files with Foreign Station (specific data)**

I/F DATA NAME	FROM	TO	FORM	File Name	Delivery Time	COMMENTS
Reply to Operation Request	MMO	Foreign Station	ASCII character set	REQAnnnnn	any time	Delivery: after receipt of REQQ Volume: number of errors in REQQ
Operation Plan (only for GLI 250m)	MMO	Foreign Station	ASCII character set	OPLNxnnnn	8:00 UTC	Delivery: Thursday 1 week before the target week Volume: operation plan for 1 week (Tue. to next Mon.)
Operation Request (GLI 250m real-time)	Foreign Station	MMO	ASCII character set	REQQnnnnn	1:00 UTC	Delivery: Thursday 4 weeks before the target period Volume: requests for 1 week (Wed. to next Tue.)
Acquisition Results	Foreign Station	MMO	ASCII character set	REACnnnnn	after downlink	Delivery: every day 1 file for a downlink path

## Data Coverage of Mission Operation Information Files (MOIF)

Data coverage of each Mission Operation Information Files (MOIF) is determined in three variable ways. Those methods are designed to prevent ambiguity as a definition, and to be proper for their objectives.

### Type 1 of data coverage:

Start from the first ascending node after 0:00 UTC,  
i.e. the first revolution of a day,  
End just before the first ascending node after 24:00 UTC,  
i.e. the last revolution of another day.

### Type 2 of data coverage:

Start at 0:00 UTC,  
End just before 24:00 UTC.

### Type 3 of data coverage:

Start from the path including 0:00 UTC,  
End at the path including 24:00 UTC.

### Type 4 of data coverage:

Depends on specific characteristics of information file.

Files and fundamental rules to determine their data coverage are summarized in the table below.

File Name	Contents	Type	Notes
REQQ	operation request	1	
REQR	station operation request	1	
STGS	reply to REQR	1	
REQA	error report of REQQ	1	
OPLN	operation plan	1	
OPL1	operation plan for CNES (POLDER)	1	
RTIG	NRT product processing information	4	each operation segment
SHAQ	acquisition plan	1	
LVOP	L0 processing information	1	
ORST	operation results	1	
RERC	recording result	4	each downlink path
L0RL	L0 processing result	4	each downlink segment
HKDT	house keeping data (backup)	4	
ELMP	predicted orbital data	2	
ELMD	definitive orbital data	2	
TMDF	time difference data	3	
RDRM	RAW data readability report	4	each tape
SRRM	RAW data shipment report	4	each tape
SRZD	L0 product shipment report (CNES)	4	each tape
RDZD	L0 product readability report (CNE)	4	each tape
STAD	status information	4	with the update of information

In order to clarify data coverage concretely for each type 1 MOIF, path calendar of ADEOS-2 is listed in table 3-1, and data coverage in terms of path is shown in table 3-2.



Table 3-2. Paths for each Mission Operation Information Files(MOIF)

File Name	Coverage	beginning	end	number	beginning	end	number	beginning	end	number
OPLN	Date Path	Tuesday	Monday	7						
		4	1	100						
		5	2	100						
		6	3	100						
		7	57	99						
REQQ	Date Path	Wednesday	Tuesday	7						
REQR	Date Path	4	1	100						
STGS	Date Path	5	2	100						
SHAQ	Date Path	6	3	100						
		7	57	99						
ORST	Date Path	a day	same day	1						
		4	3	15						
		7	2	14						
		6	1	14						
		5	57	14						
LVOP	Date Path	Wednesday	Thursday	2	Friday	Saturday	2	Sunday	Tuesday	3
RTIG	Date Path	4	2	29	6	57	28	4	1	43
		5	3	29	7	1	28	5	2	43
		6	57	28	4	2	29	6	3	43
		7	1	28	5	3	29	7	57	42

"number" for "Date Coverage" is in days.  
"number" for "Path Coverage" is in paths.

ORST is a common use file prepared by MMO to inform all agencies of the operational results of all mission instruments onboard ADEOS-II based on RERC files. ORST includes the data acquisition results and recording results of NASDA/EOC, Kiruna station, NASA ground stations and foreign ground stations.

ORST is generated everyday before 8:00 UTC and covers basically one day length of acquisition and recording results.

## 1. File Structure

Table 1. File Structure

ORST Header Record
Data Record 1: Result of Downlink Seg. #1
Data Record 2: Result of Downlink Seg. #2
Data Record 3: Result of Downlink Seg. #3
Data Record n: Result of Downlink Seg. #n

- Notes:
1. All fields are written in ASCII character code.
  2. See Table 3-2 for ORST data coverage.

## 2. Record Structure

Table 2. ORST Header Record

No.	Field	Contents Description	Bytes	Byte #
1	File Name	ORSTnnnnnn nnnnnn: file sequential number	10	0
2	blank	0x20 (delimiter)	1	10
3	Project Name	XXXXXX 'ADEOS2'(fixed)	6	11
4	blank	0x20 (delimiter)	1	17
5	EOC MMO Code (from)	XXXX 'HMMO'(fixed)	4	18
6	blank	0x20 (delimiter)	1	22
7	Agency Code (to)	XXXX '*****' (fixed)	4	23
8	blank	0x20 (delimiter)	1	27
9	File Creation Date (UTC)	YYYYMMDD	8	28
10	blank	0x20 (delimiter)	1	36
11	File Creation Time (UTC)	hh:mm:ss	8	37
12	blank	0x20 (delimiter)	1	45
13	Length of Data Record	NNNN ' 179' (fixed)	4	46
14	blank	0x20 (delimiter)	1	50
15	Number of Data Records	NNNNN number of downlink segments reported here	5	51
16	blank	0x20 (delimiter)	1	56
17	Begin Date of Data (UTC)	YYYYMMDD '*****' (fixed)	8	57
18	blank	0x20 (delimiter)	1	65
19	End Date of Data (UTC)	YYYYMMDD '*****' (fixed)	8	66
20	blank	0x20 (delimiter)	1	74
21	File Format Version (date,UTC)	YYYYMMDD date when the file format is authorized	8	75
22	blank	0x20 (delimiter)	1	83
23	File Format Version (number)	VNN NN: version number	3	84
24	blank	0x20 (delimiter)	1	87
25	Reserved	all blank space (0x20)	39	88
26	Record End	0x0A	1	127
				Sum 128

Table 3. ORST Data Record (1/2)

No.	Field	Contents Description	Byte	Byte #
1	Downlink Path Number	P d d d d n n s s s	11	0
2	blank	0x20 (delimiter)	1	11
3	Downlink Segment Number	D x x x d d d d s s s - z z	14	12
4	blank	0x20 (delimiter)	1	26
5	Begin Date of Acquisition(UTC)	YYYYMMDD hh:mm:ss absolute time for the start of downlink seg.	17	27
6	blank	0x20 (delimiter)	1	44
7	End Date of Acquisition(UTC)	YYYYMMDD hh:mm:ss absolute time for the stop of downlink seg.	17	45
8	blank	0x20 (delimiter)	1	62
9	Acquisition Frequency Band	XXX 'X1' : X1 band 'X3' : X3 band 'QCH': Qch band 'ICH': Ich band	3	63
10	blank	0x20 (delimiter)	1	66
11	Acquisition Mode	XXX 'GLI' : real-time GLI250m data 'MDR' : MDR reproduction of multiple data 'ODM' : ODR reproduction of multiple data 'ODR' : ODR reproduction of GLI250m data 'MRT' : multiple real-time data capture	3	67
12	blank	0x20 (delimiter)	1	70
13	Station Code	XXXX 'HEOC': NASDA/EOC(Hatoyama) 'ASF' : Alaska SAR Facility 'WFF' : Wallops Flight Facility 'KRNS': Kiruna station	4	71
14	blank	0x20 (delimiter)	1	75
15	RAW Tape Number	DSSMnnnnnn D: indicating D1 cassette SS: 22->HEOC, 65->ASF, 66->WFF, 70->KRNS M: 2->Master tape, 3->Backup tape 9->Work Tape nnnnnn: 000001 to 899999 ***** for REDU or X3 downlink	10	76
16	blank	0x20 (delimiter)	1	86
17	Positional ID of Recording Start	NNNNNN ***** for REDU or X3 downlink	6	87
18	blank	0x20 (delimiter)	1	93

Table 3. ORST Data Record (2/2)

No.	Field	Contents Description	Byte	Byte #
19	Positional ID of Recording Stop	NNNNNN '*****' for REDU or X3 downlink	6	94
20	blank	0x20 (delimiter)	1	100
21	Begin Date of Recording(UTC)	YYYYMMDD hh:mm:ss '***** *' for REDU or X3 downlink	17	101
22	blank	0x20 (delimiter)	1	118
23	End Date of Recording(UTC)	YYYYMMDD hh:mm:ss '***** *' for REDU or X3 downlink	17	119
24	blank	0x20 (delimiter)	1	136
25	Lock-On Date(UTC)	YYYYMMDD hh:mm:ss	17	137
26	blank	0x20 (delimiter)	1	154
27	Lock-Off Date(UTC)	YYYYMMDD hh:mm:ss	17	155
28	blank	0x20 (delimiter)	1	172
29	Acquisition Status	N 'G': status 98 % 'P': status < 98 % 'N': No Data	1	173
30	blank	0x20 (delimiter)	1	174
31	Recording Status	NNN status in % '***' for REDU or X3 downlink	3	175
32	Record End	0x0A	1	178
				合計 179

ELMP is the common use file prepared by MMO to inform all agencies of orbital data. ELMP includes predictive ephemeris data for station antenna pointing and covers one day of data with one minute intervals.

ELMP are usually updated before 8:00 UTC on Monday, Wednesday and Friday.

However, in the period of high solar activity, ELMP data are updated everyday.

MMO makes 5 ELMP files, which include the data of the same day and future 4 days, available each time updates are performed.

## 1. File Structure

Table 1. File Structure

ELMP Header Record
Data Record 1: Orbital Vector 1
Data Record 2: Orbital Vector 2
:
⋮
⋮
Data Record 1440: Orbital Vector 1440

- Notes:
1. All fields are described in ASCII character code.
  2. Orbital vectors are provided for each minute of the day.
  3. One day from UTC 0:00 is contained in one ELMP/ELMD file.

## 2. Record Structure

Table 2. ELMP Header Record

No.	Field	Contents Description	Bytes	Byte #
1	File Name	EPyyymmdd yyymmdd: date of the data(year, month, day)	10	0
2	blank	0x20 (delimiter)	1	10
3	Project Name	XXXXXX 'ADEOS2'(fixed)	6	11
4	blank	0x20 (delimiter)	1	17
5	EOC MMO Code (from)	XXXX 'HMMO'(fixed)	4	18
6	blank	0x20 (delimiter)	1	22
7	Agency Code (to)	XXXX '*****' (fixed)	4	23
8	blank	0x20 (delimiter)	1	27
9	File Creation Date (UTC)	YYYYMMDD	8	28
10	blank	0x20 (delimiter)	1	36
11	File Creation Time (UTC)	hh:mm:ss	8	37
12	blank	0x20 (delimiter)	1	45
13	Length of Data Record	NNNN ' 90' (fixed)	4	46
14	blank	0x20 (delimiter)	1	50
15	Number of Data Records	NNNNN ' 1440' (fixed)	5	51
16	blank	0x20 (delimiter)	1	56
17	Begin Date of Data (UTC)	YYYYMMDD	8	57
18	blank	0x20 (delimiter)	1	65
19	End Date of Data (UTC)	YYYYMMDD date usually the same as field #17	8	66
20	blank	0x20 (delimiter)	1	74
21	File Format Version (date,UTC)	YYYYMMDD date when the file format is authorized	8	75
22	blank	0x20 (delimiter)	1	83
23	File Format Version (number)	VNN NN: version number	3	84
24	blank	0x20 (delimiter)	1	87
25	Reserved	all blank space (0x20)	39	88
26	Record End	0x0A	1	127
				Sum 128

Table 3. ELMP Data Record

No.	Field	Contents Description	Bytes	Byte #
1	Time for Orbital Data	NNNN.NNNNNNNN MJD in UTC	14	0
2	blank	0x20 (delimiter)	1	14
3	Position Vector X component	SNNNN.NNNNN S: sign ('-' for negative value) value is in km	13	15
4	blank	0x20 (delimiter)	1	28
5	Position Vector Y component	SNNNN.NNNNN S: sign ('-' for negative value) value is in km	13	29
6	blank	0x20 (delimiter)	1	42
7	Position Vector Z component	SNNNN.NNNNN S: sign ('-' for negative value) value is in km	13	43
8	blank	0x20 (delimiter)	1	56
9	Velocity Vector X component	SNN.NNNNN S: sign ('-' for negative value) value is in km/sec	10	57
10	blank	0x20 (delimiter)	1	67
11	Velocity Vector Y component	SNN.NNNNN S: sign ('-' for negative value) value is in km/sec	10	68
12	blank	0x20 (delimiter)	1	78
13	Velocity Vector Z component	SNN.NNNNN S: sign ('-' for negative value) value is in km/sec	10	79
14	Record End	0x0A	1	89
				Sum 90

ELMD is the common use file prepared by MMO to inform all agencies of orbital data. ELMD includes definitive ephemeris data for precise processing of image data and covers one day of data with one minute intervals.

ELMD are usually updated before 8:00 UTC on Monday, Wednesday and Friday.

However, in the period of high solar activity, ELMD data are updated everyday.

MMO makes 3 ELMD files, which include the data of the previous 3 days, available each time updates are performed.

## 1. File Structure

Table 1. File Structure

ELMD Header Record
Data Record 1: Orbital Vector 1
Data Record 2: Orbital Vector 2
:
⋮
Data Record 1440: Orbital Vector 1440

- Notes:
1. All fields are described in ASCII character code.
  2. Orbital vectors are provided for each minute of the day.
  3. One day from UTC 0:00 is contained in one ELMP/ELMD file.

## 2. Record Structure

Table 2. ELMD Header Record

No.	Field	Contents Description	Bytes	Byte #
1	File Name	ED y y yymmdd yymmdd: date of the data(year, month, day)	10	0
2	blank	0x20 (delimiter)	1	10
3	Project Name	XXXXXX 'ADEOS2'(fixed)	6	11
4	blank	0x20 (delimiter)	1	17
5	EOC MMO Code (from)	XXXX 'HMMO'(fixed)	4	18
6	blank	0x20 (delimiter)	1	22
7	Agency Code (to)	XXXX '*****' (fixed)	4	23
8	blank	0x20 (delimiter)	1	27
9	File Creation Date	YYYYMMDD date(UTC)	8	28
10	blank	0x20 (delimiter)	1	36
11	File Creation Time	hh:mm:ss time(UTC)	8	37
12	blank	0x20 (delimiter)	1	45
13	Length of Data Record	NNNN ' 90' (fixed)	4	46
14	blank	0x20 (delimiter)	1	50
15	Number of Data Records	NNNNN ' 1440' (fixed)	5	51
16	blank	0x20 (delimiter)	1	56
17	Begin Date of Data	YYYYMMDD date(UTC)	8	57
18	blank	0x20 (delimiter)	1	65
19	End Date of Data	YYYYMMDD date(UTC) usually the same as field #17	8	66
20	blank	0x20 (delimiter)	1	74
21	File Format Version (date)	YYYYMMDD date when the file format is authorized	8	75
22	blank	0x20 (delimiter)	1	83
23	File Format Version (number)	VNN NN: version number	3	84
24	blank	0x20 (delimiter)	1	87
25	Reserved	all blank space (0x20)	39	88
26	Record End	0x0A	1	127
				Sum 128

Table 3. ELMD Data Record

No.	Field	Contents Description	Bytes	Byte #
1	Time for Orbital Data	NNNN.NNNNNNNN MJD in UTC	14	0
2	blank	0x20 (delimiter)	1	14
3	Position Vector X component	SNNNN.NNNNN S: sign ('-' for negative value) value is in km	13	15
4	blank	0x20 (delimiter)	1	28
5	Position Vector Y component	SNNNN.NNNNN S: sign ('-' for negative value) value is in km	13	29
6	blank	0x20 (delimiter)	1	42
7	Position Vector Z component	SNNNN.NNNNN S: sign ('-' for negative value) value is in km	13	43
8	blank	0x20 (delimiter)	1	56
9	Velocity Vector X component	SNN.NNNNN S: sign ('-' for negative value) value is in km/sec	10	57
10	blank	0x20 (delimiter)	1	67
11	Velocity Vector Y component	SNN.NNNNN S: sign ('-' for negative value) value is in km/sec	10	68
12	blank	0x20 (delimiter)	1	78
13	Velocity Vector Z component	SNN.NNNNN S: sign ('-' for negative value) value is in km/sec	10	79
14	Record End	0x0A	1	89
				Sum 90

TMDF is a common use file prepared by MMO to inform all agencies of the relation between space time and time counter onboard ADEOS-II.

The relation is approximated by a linear function and the two components of its linear coefficients are set in TMDF file. MMO will prepare TMDF before 7:00 UTC everyday. TMDF covers 1 day of time difference data.

There are two kinds of TMDF,

- 1) one is the data calculated by TACC for Mode 1 operation,
- 2) another is those done by EOC/MMO for Mode 2 operation.

## 1. File Structure

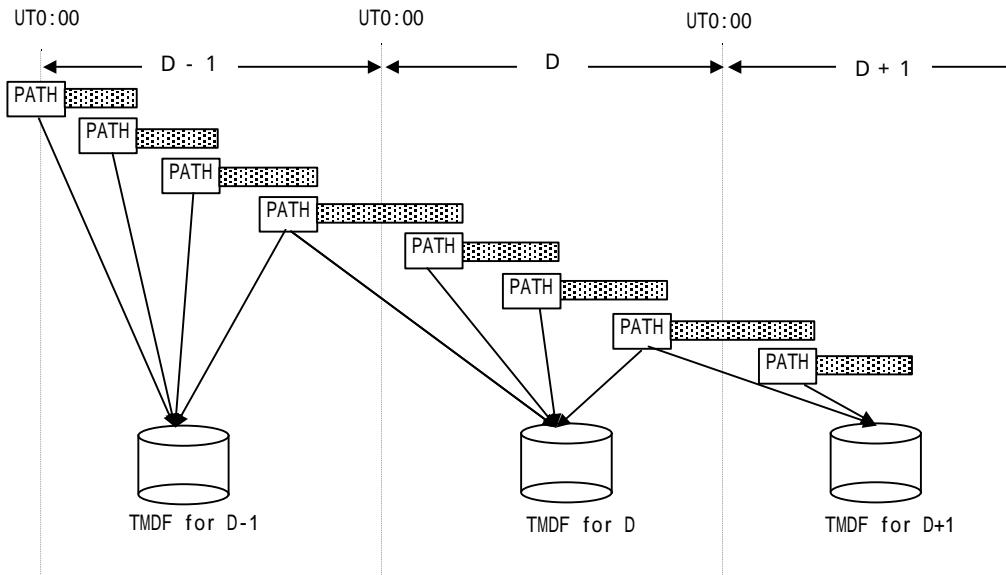
Table 1. File Structure

TMDF Header Record
Data Record 1: Time Difference #1
Data Record 2: Time Difference #2
Data Record n: Time Difference #n

Notes: 1. TMDF data are calculated by using predictive ephemeris data.

2. Method of data storage is illustrated below.

The linear function is calculated every visible path, and one day length of those data are stored into one file. However, there will appear the same data of boundary pass between two days in the successive two TMDF files.



## 2. Record Structure

Table 2. TMDF Header Record

No.	Field	Contents Description	Bytes	Byte #
1	File Name	TDyyymmdd yyyymmdd: date of the data(year, month, day)	10	0
2	blank	0x20 (delimiter)	1	10
3	Project Name	XXXXXX 'ADEOS2'(fixed)	6	11
4	blank	0x20 (delimiter)	1	17
5	EOC MMO Code (from)	XXXX 'HMMO'(fixed)	4	18
6	blank	0x20 (delimiter)	1	22
7	Agency Code (to)	XXXX '*****' (fixed)	4	23
8	blank	0x20 (delimiter)	1	27
9	File Creation Date (UTC)	YYYYMMDD	8	28
10	blank	0x20 (delimiter)	1	36
11	File Creation Time (UTC)	hh:mm:ss	8	37
12	blank	0x20 (delimiter)	1	45
13	Length of Data Record	NNNN ' 113' (fixed)	4	46
14	blank	0x20 (delimiter)	1	50
15	Number of Data Records	NNNNN number of time difference data	5	51
16	blank	0x20 (delimiter)	1	56
17	Begin Date of Data (UTC)	YYYYMMDD	8	57
18	blank	0x20 (delimiter)	1	65
19	End Date of Data (UTC)	YYYYMMDD see Note	8	66
20	blank	0x20 (delimiter)	1	74
21	File Format Version (date, UTC)	YYYYMMDD date when the file format is authorized	8	75
22	blank	0x20 (delimiter)	1	83
23	File Format Version (number)	VNN NN: version number	3	84
24	blank	0x20 (delimiter)	1	87
25	Reserved	all blank space (0x20)	39	88
26	Record End	0x0A	1	127
				Sum 128

Note: When the latest time-difference data are included in the data record,  
'99999999' is set in field #19.

Table 3. TMDF data Record

No.	Field	Contents Description	Byte	Byte #
1	Orbit Total Number of the Pass	NNNNN ***** (fixed)	5	0
2	blank	0x20 (delimiter)	1	5
3	A.N. Time of the Pass	YYYYMMDD time passing A.N. for the pass of #1	8	6
4	blank	0x20 (delimiter)	1	14
5	Path Number of the Pass	PP path number of the pass #1	5	15
6	blank	0x20 (delimiter)	1	20
7	Start Date of the Data (UTC)	YYYYMMDD hh:mm:ss.ttt	21	21
8	blank	0x20 (delimiter)	1	42
9	Stop Date of the Data (UTC)	YYYYMMDD hh:mm:ss.ttt see Note	21	43
10	blank	0x20 (delimiter)	1	64
11	SC Counter Period (sec)	sn.nnnnnnnnnn	13	65
12	blank	0x20 (delimiter)	1	78
13	Reference Counter of SC Clock	NNNNNNNNNNNN	11	79
14	blank	0x20 (delimiter)	1	90
15	Reference Ground Time	YYYYMMDD hh:mm:ss.ttt	21	91
16	Record End	0x0A	1	112
				合計 113

Note:

When the latest time-difference data are included in the record, '99999999 99:99:99.999' is set in field #9.

Ground time(UTC) can be calculated from the clock counter by the following equation;

( This is the same as in ADEOS. Some portion could be changed in ADEOS-II )

$$\text{Ground Time(UTC)} = P_{\text{SC}} \times (T_{\text{SC}} - T_{\text{ref}}) + T_{\text{gref}}$$

where

$P_{\text{SC}}$  : SC Counter Period

$T_{\text{SC}}$  : SC Clock Counter ( LSB: $2^0$  sec unit )

$$T_{\text{SC}'} = T_{\text{SC}} / 32$$

$T_{\text{SC}'}$  : SC Clock Counter ( LSB: $2^{-5}$  no unit )

The value of  $2^{-1}$  to  $2^{-5}$  is always 0 in this definition.

$T_{\text{ref}}$  : Reference Counter of SC Clock

$T_{\text{gref}}$  : Reference Ground Time

STAD is a common use file prepared by MMO to inform all agencies of the status of ADEOS-2 flight segment (orbit maneuvering schedule and results, spacecraft emergency (preliminary report), etc.) and the status of the ADEOS-2 ground segment (maintenance, anomaly, etc.). MMO prepares STAD before 9:00 on Wednesday 1 day before the scheduled maneuver. Anomalous status is reported as needed.

## 1. File Structure

Table 1. File Structure

	record number
STAD Header Record	1
STAD Descriptor Record	2
Data Record 1: s/c Maneuver Schedule 1	3
:	
:	
Data Record n: s/c Maneuver Schedule n	n+2
Data Record n+1: Satellite Status	n+3
Data Record n+2: Ground System Status	n+4

Notes: All fields are described in ASCII character code.

## 2. Record Structure

Table 1. STAD Header Record

No.	Field	Contents Description	Bytes	Byte #
1	File Name	STADnnnnnn nnnnnn: file sequential number	10	0
2	blank	0x20 (delimiter)	1	10
3	Project Name	XXXXXX 'ADEOS2'(fixed)	6	11
4	blank	0x20 (delimiter)	1	17
5	EOC MMO Code (from)	XXXX 'HMMO'(fixed)	4	18
6	blank	0x20 (delimiter)	1	22
7	Agency Code (to)	XXXX '*****'(fixed)	4	23
8	blank	0x20 (delimiter)	1	27
9	File Creation Date (UTC)	YYYYMMDD	8	28
10	blank	0x20 (delimiter)	1	36
11	File Creation Time (UTC)	hh:mm:ss	8	37
12	blank	0x20 (delimiter)	1	45
13	Length of Data Record	NNNN ' 256' (fixed)	4	46
14	blank	0x20 (delimiter)	1	50
15	Number of Data Records	NNNNN number of maneuver schedules and status reports	5	51
16	blank	0x20 (delimiter)	1	56
17	Begin Date of Report (UTC)	YYYYMMDD	8	57
18	blank	0x20 (delimiter)	1	65
19	End Date of Report (UTC)	YYYYMMDD	8	66
20	blank	0x20 (delimiter)	1	74
21	File Format Version (date,UTC)	YYYYMMDD date when the file format is authorized	8	75
22	blank	0x20 (delimiter)	1	83
23	File Format Version (number)	VNN NN: version number	3	84
24	blank	0x20 (delimiter)	1	87
25	Reserved	all blank space (0x20)	39	88
26	Record End	0x0A	1	127
				Sum 128

Notes: Field #15 'Number of Data Records' doesn't include the Descriptor Record.

Table 2. STAD Descriptor Record

No.	Field	Contents Description	Bytes	Byte #
1	Number of the Data Records	NN number of the data records in STAD	2	0
2	blank	0x20 (delimiter)	1	2
3	Number of Maneuver Schedule	NN number of the records of maneuver schedule	2	3
4	blank	0x20 (delimiter)	1	5
5	Record Number of Satellite Status	NN record number of satellite status '***': when STAD doesn't contain the records	2	6
6	blank	0x20 (delimiter)	1	8
7	Record Number of Ground Station Status	NN record number of ground station status '***': when STAD doesn't contain the records	2	9
8	Record End	0x0A	1	11
				Sum 12

Table 3. STAD Data Record (s/c maneuver schedule)

No.	Field	Contents Description	Bytes	Byte #
1	Begin Date of Maneuver(UTC)	YYYYMMDD hh:mm:ss date and time	17	0
2	blank	0x20 (delimiter)	1	17
3	End Date of Maneuver(UTC)	YYYYMMDD hh:mm:ss date and time	17	18
4	blank	0x20 (delimiter)	1	35
5	Start RSP of Maneuver	PPPPP AAA.AA	12	36
6	blank	0x20 (delimiter)	1	48
7	Stop RSP of Maneuver	PPPPP AAA.AA	12	49
8	blank	0x20 (delimiter)	1	61
9	plan/result	X 'P': plan (1 day before)	1	62
10	blank	0x20 (delimiter)	1	63
11	Maneuver Type	XXX +dV, -dV, dI	3	64
12	Reserved	all blank space(0x20)	188	67
13	Record End	0x0A	1	255
				Sum 256

Table 4. STAD Data Record (satellite status)

No.	Field	Contents Description	Bytes	Byte #
1	Comments	status of ADEOS-2 and instruments is reported.	255	0
2	Record End	0x0A	1	255
				Sum 256

Table 5. STAD Data Record (ground station status)

No.	Field	Contents Description	Bytes	Byte #
1	Comments	status of the ground stations (EOC, ASF, WFF, KRNS) is reported.	255	0
2	Record End	0x0A	1	255
				Sum 256